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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,793	09/10/2003	Mark R. Frye	82058-0013	1829
24633	7590	12/13/2004	EXAMINER	
HOGAN & HARTSON LLP IP GROUP, COLUMBIA SQUARE 555 THIRTEENTH STREET, N.W. WASHINGTON, DC 20004			PATEL, MITAL B	
			ART UNIT	PAPER NUMBER
			3743	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/658,793</p>	<p>Applicant(s)</p> <p align="center">FRYE ET AL.</p>	
	<p>Examiner</p> <p align="center">Mital B. Patel</p>	<p>Art Unit</p> <p align="center">3743</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Please note that Figure 2 and Figure 3 have been marked-up and replacement sheets have not been submitted. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Marked-up Drawings" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally **limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.** The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 22-26, 28-30, 33, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Andonian (US 5,357,758).

5. **As to claim 22**, Andonian teaches a portable, high-efficiency liquid oxygen (LOX) storage/delivery apparatus, comprising a portable LOX container **10**; a portable-unit LOX transfer connector **22** connected to said portable container and capable of receiving and transferring LOX to said portable container; an economizer valve **88** for minimizing venting by balancing gaseous and liquid oxygen withdrawal from said portable LOX container; and a portable-unit oxygen gas transfer connector (**See Fig. 1, connector that connects tubing 73**) for transferring oxygen gas to an oxygen gas delivery device **84** for delivery.

6. **As to claim 23**, Andonian teaches an apparatus wherein said economizer valve **88** opens to allow oxygen gas from a gaseous head-space in said portable LOX container to pass through when the pressure of said oxygen gas in said portable LOX container exceeds a predetermined threshold level and otherwise is closed and allows oxygen gas from evaporated LOX to pass through (**See Col. 9, lines 4-59**).

7. **As to claim 24**, Andonian teaches an apparatus further comprising a liquid withdrawal conduit **18** and a gaseous withdrawal conduit **82**, which are in communication with the interior of said container.
8. **As to claim 25**, Andonian teaches an apparatus wherein in an inner diameter of said liquid withdrawal conduit is sized so that when said economizer valve is open, gaseous flow from the head-space of said portable LOX container is preferred over flow through said liquid withdrawal conduit (**See Col. 9, lines 4-20**).
9. **As to claim 26**, Andonian teaches an apparatus further comprising at least one of a liquid withdrawal warming coil **58** and a gaseous withdrawal warming coil **80**.
10. **As to claim 28**, Andonian teaches an apparatus wherein said economizer valve further comprises a relief valve **86**.
11. **As to claim 29**, Andonian teaches an apparatus further comprising a vent valve **50**.
12. **As to claim 30**, Andonian teaches an apparatus wherein said vent valve may be open during filling of said portable LOX container (**See Col. 7, lines 1-3**).
13. **As to claim 33**, Andonian teaches an apparatus further comprising an inter-unit oxygen gas transfer connector **46**.
14. **As to claim 34**, Andonian teaches an apparatus further comprising a check-valve **54** (note the Examiner considers the "pressure relief valve to be equivalent in scope since the relief valve acts to "blow off" the gas at a certain pressure).

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Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 27, 32, 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andonian (US 5,357,758).

19. **As to claim 27**, Andonian teaches essentially all of the limitations except for wherein an inner diameter of said liquid withdrawal warming coil is greater than the inner diameter of said liquid withdrawal conduit. However, Applicant on page 11, lines 5-6 discloses that the inner diameter of liquid withdrawal warming coil **may be** greater than that of the liquid withdrawal conduit, implying that such feature is not essential and/or necessary to the invention. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention that the liquid withdrawal warming coil as taught by Andonian would perform equally as well to withdraw the liquid.

20. **As to claim 32**, Andonian teaches essentially all of the limitations except for wherein said oxygen gas delivery device is a multi-lumen annular conduit. Rather, Andonian teaches a face mask as the oxygen gas delivery device. However, the use of a multi-lumen annular conduit such as a nasal cannula as an oxygen gas delivery device is old and well known in the respiratory art. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the oxygen gas delivery device of Andonian with any other oxygen gas delivery device since the function of the oxygen gas delivery device (to deliver gas to the user) is not altered by the type of device used to delivery the oxygen gas.

21. **As to claims 36-39**, Andonian teaches essentially all of the limitations except for the specific weight, time, and rate as set forth in the recited claims. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrive at the limitations set forth since these limitations will vary depending on the environment

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of use (e.g., mining, diving, at home therapy), the person using the device (e.g., miner, diver, elderly, firefighter), and the intended therapy.

22. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andonian (US 5,511,542) in view of Leonard et al (US 4,211,086).

23. **As to claim 31**, Andonian teaches essentially all of the limitations except for a demand flow control device for adjustment of gas flow through said portable-unit oxygen gas transfer connector. However, Leonard et al in a LOX breathing system teaches a demand flow control device **43,68** so that the user can control the flow of oxygen gas that is to be consumed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a demand flow control device as taught by Leonard et al so that the user can control the flow of oxygen gas that is to be consumed.

24. Claims 35, 40-48, and 51-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andonian (US 5,357,758) in view of Todd, Jr (US 6,446,630).

25. **As to claim 35**, Andonian teaches essentially all of the limitations except for a conserving device. However, Todd, Jr. does teach the use of a conserving device so that there is not a waste of oxygen as there would be if the oxygen were supplied continuously (**See Col. 1, lines 64-67 and Col. 2, lines 1-22**). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a conserving device in the LOX apparatus of Andonian as disclosed by Todd, Jr. so that oxygen is not wasted and is conserved.

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26. **As to claim 40**, Andonian teaches a portable, high-efficiency liquid oxygen (LOX) storage/delivery apparatus, comprising a portable LOX container **10**; a portable-unit LOX transfer connector **22** connected to said portable container and connectable to a main source (**See Col. 6, lines 66-68**) of LOX for transferring LOX to said portable container; a portable-unit oxygen gas transfer connector (**See Fig. 1, connector that connects tubing 73**) for transferring oxygen gas to an oxygen gas delivery device **84** for delivery. Andonian does not specifically teach a conserving device for LOX conservation which provides oxygen gas to said portable unit oxygen gas transfer connector. However, Todd, Jr. does teach the use of a conserving device so that there is not a waste of oxygen as there would be if the oxygen were supplied continuously (**See Col. 1, lines 64-67 and Col. 2, lines 1-22**). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a conserving device in the LOX apparatus of Andonian as disclosed by Todd, Jr. so that oxygen is not wasted and is conserved.

27. **As to claim 41**, the above combination teaches an apparatus wherein said conserving device stops a flow of oxygen gas to said delivery device when a patient exhales (**See Col. 2, lines 4-9 of Todd, Jr.**).

28. **As to claim 42**, the above combination teaches an apparatus wherein oxygen gas accumulates in the conserving device when the patient exhales (**this would be an inherent property based on the disclosure of Todd, Jr. regarding the conserving device stopping flow of oxygen during exhalation**).

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29. **As to claim 43**, the above combination teaches an apparatus wherein a puff of oxygen gas is delivered to said delivery device from said conserving device when the patient inhales (**See Col. 2, lines 6-9 with the Examiner interpreting a short duration oxygen dose to read on "a puff"**).

30. **As to claim 44**, the above combination teaches an apparatus wherein said conserving device delivers an even flow of oxygen gas to said delivery device after said puff and until the patient exhales again (**this can be inferred from the disclosure of Col. 2, lines 4-15**).

31. **As to claims 45-47**, conserving devices of the pneumatic type and electric type powered by batteries are known in the art (**See US 5,881,725, specifically Col. 1, lines 20-22 cited as extrinsic evidence**).

32. **As to claim 48**, the above combination teaches an apparatus wherein said conserving device delivers puffs of oxygen gas.

33. **As to claim 51**, Andonian teaches an apparatus further comprising an inter-unit oxygen gas transfer connector **46**.

34. **As to claim 52**, the above combination teaches an apparatus wherein said inter-unit oxygen gas transfer connector delivers oxygen gas to said conserving device.

35. **As to claim 53**, Andonian teaches an apparatus further comprising a check-valve **54** (**note the Examiner considers the "pressure relief valve to be equivalent in scope since the relief valve acts to "blow off" the gas at a certain pressure**).

36. **As to claim 54**, Andonian teaches an apparatus further comprising a liquid withdrawal conduit **18** and a gaseous withdrawal conduit **82**, which are in communication with the interior of said container.

37. **As to claim 55**, Andonian teaches an apparatus further comprising an economizer valve **88** for minimizing venting by balancing gaseous and liquid oxygen withdrawal from said portable LOX container for delivery to said conserving device.

38. **As to claim 56**, Andonian teaches an apparatus wherein said economizer valve **88** opens to allow oxygen gas from a gaseous head-space in said portable LOX container to pass through when the pressure of said oxygen gas in said portable LOX container exceeds a predetermined threshold level and otherwise is closed and allows oxygen gas from evaporated LOX to pass through (**See Col. 9, lines 4-59**).

39. **As to claim 57**, Andonian teaches an apparatus further comprising a liquid withdrawal conduit **18** and a gaseous withdrawal conduit **82**, which are in communication with the interior of said container.

40. **As to claim 58**, Andonian teaches essentially all of the limitations except for wherein an inner diameter of said liquid withdrawal warming coil is greater than the inner diameter of said liquid withdrawal conduit. However, Applicant on page 11, lines 5-6 discloses that the inner diameter of liquid withdrawal warming coil **may be** greater than that of the liquid withdrawal conduit, implying that such feature is not essential and/or necessary to the invention. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention that the liquid withdrawal warming coil as taught by Andonian would perform equally as well to withdraw the liquid.

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41. **As to claim 59**, Andonian teaches an apparatus further comprising a portable-unit primary relief valve **86**.

42. **As to claim 60**, Andonian teaches an apparatus further comprising a vent valve **50**.

43. **As to claim 61**, Andonian teaches an apparatus wherein said vent valve may be open during filling of said portable LOX container (**See Col. 7, lines 1-3**).

44. **As to claim 62**, Andonian teaches essentially all of the limitations except for wherein said oxygen gas delivery device is a multi-lumen annular conduit. Rather, Andonian teaches a face mask as the oxygen gas delivery device. However, the use of a multi-lumen annular conduit such as a nasal cannula as an oxygen gas delivery device is old and well known in the respiratory art. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the oxygen gas delivery device of Andonian with any other oxygen gas delivery device since the function of the oxygen gas delivery device (to deliver gas to the user) is not altered by the type of device used to delivery the oxygen gas.

45. **As to claims 63-66**, Andonian teaches essentially all of the limitations except for the specific weight, time, and rate as set forth in the recited claims. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrive at the limitations set forth since these limitations will vary depending on the environment of use (e.g., mining, diving, at home therapy), the person using the device (e.g., miner, diver, elderly, firefighter), and the intended therapy.

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46. Claims 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andonian/Todd, Jr. as applied to claim 40 above, and further in view of Leonard et al (US 4,211,086).

47. **As to claims 49-50**, Andonian/Todd, Jr. teach essentially all of the limitations except for a demand flow control device coupled to a conserving device for adjustment of gas flow from said container to said delivery device. However, Leonard et al in a LOX breathing system teaches a demand flow control device **43,68** so that the user can control the flow of oxygen gas that is to be consumed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a demand flow control device as taught by Leonard et al so that the user can control the flow of oxygen gas that is to be consumed.

Conclusion


48. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5511542, US 4664146, US 4541276, US 4501270, and US 3572048.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mital B. Patel whose telephone number is 571-272-4802. The examiner can normally be reached on Monday-Friday (11:00-7:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mital B. Patel
Examiner
Art Unit 3743

12/8/04